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INDUSTRIAL

Mr. James Saric
Remedial Project Manager
USEPA Region 5
77 West Jackson Boulevard
Mail Code: SR-6J
Chicago, IL 60605-3507

Subject:
Proposed Plainwell No. 2 Dam Area Investigation Plan

Date:
April 17, 2008

Contact:
Michael J. Erickson

Phone:
810.225.1924

Email:
michael.erickson@arcadis-us.com

Our ref:
B0064539.500

Dear Mr. Saric:

The Supplemental Remedial Investigation/Feasibility Study Work Plan for Area 1 of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site calls for reconnaissance and survey work to map the approximate extent of the historically-inundated area upstream of the Plainwell No. 2 Dam in order to develop appropriate soil sampling locations.

In a letter dated January 22, 2008, the results of the delineation of the historically-inundated area (i.e., the floodplain) upstream of the Plainwell No. 2 Dam and proposed locations for floodplain soil sampling were submitted to USEPA for review. On February 27, the KRSG received comments on the proposed plan from the USEPA and MDEQ. KRSG has expanded the plan presented in the January 22 letter to include elements suggested by MDEQ, but also to include additional work to expedite development of a more complete understanding of the current situation in the Plainwell No. 2 Dam area. This letter proposes the expanded investigation we would like to implement as soon as possible, following USEPA approval and on a schedule that accommodates agency oversight.

The proposed investigation activities include:

- Soil sampling from a uniform 200-foot grid established in the floodplain, including sampling of the in-stream islands
- Survey of bank profiles, river transects, upland elevations, and dam structure components

- Soil sampling from the top of banks at bank profile sampling locations
- Sediment probing and surveying across additional river channel transects
- Sediment core sampling at selected locations, using a stratified sampling approach to preferentially target fine-grained sediment for PCB analysis, but to also measure PCB in representative coarse-grained samples
- Monitoring of water levels at three temporary staff gages to support hydraulic analyses (if needed)

All work will be performed by ARCADIS personnel familiar with the area and the Kalamazoo River project, and all work will be performed consistent with the methods and protocols set forth in the Multi-Area guidance documents (Field Sampling Plan, Quality Assurance Project Plan, and Health and Safety Plan). TestAmerica (formerly STL) will provide analytical laboratory services.

Our goal is to complete field activities in May 2008. Rather than waiting for all 2008-season data to be collected, field investigation and laboratory analytical results from the work described here will be reported separately from, and in advance of, results from other Area 1 Phase 2 SRI work to be conducted in 2008. The components of the proposed investigation are described in more detail below. Proposed sampling locations are shown in Figures 1 and 2, and the proposed field activities are summarized in Table 1.

All survey work will be conducted using conventional survey methods or GPS equipment, as conditions warrant. Both methods will include horizontal coordinates and vertical elevations with an accuracy of approximately 0.1 foot. Proposed bank profile locations are shown on Figure 2. Survey data will be provided in terms of State Plane Michigan South Zone, NAD 83, International Feet and National Geodetic Vertical Datum of 1929.

Floodplain Soil Sampling

To characterize the distribution of PCB in floodplain soils of the area of historical inundation, soil will be sampled on a 200-foot grid, with additional samples on instream islands, at approximately 94 locations (see Figure 1). Soil cores will be collected and segmented into the 0- to 6-inch depth interval, 6- to 12-inch depth interval, and subsequent one-foot depth intervals to the bottom of the core.

Sectioning will be varied as necessary to capture visually-distinct strata, where present. All samples will be submitted to the laboratory for PCB analysis. The surface sample from each core will also be analyzed for TOC and particle size distribution. A total of approximately 282 samples will be analyzed for PCB (assuming an average core depth of two feet) and 94 samples will be analyzed for TOC and particle size distribution. Proposed grid sample locations are shown in Figure 1.

Survey data generated from the grid sampling will complement the proposed upland survey work and the existing SRI survey data in the development of a topographic map of the area.

Bank Characterization

To characterize bank conditions, top-of-bank soil samples will be collected and bank profiles will be surveyed at approximately 300-foot intervals along both banks, including within the former oxbow and island side channels. Bank characterization will be conducted at 39 stations on the bank for a total of 78 individual bank profiles and top-of-bank samples.

Detailed bank profile elevations will be recorded from past the top-of-bank down to the river bed. The top of the bank, the slope of the bank, and the toe of the bank under the surface of the water will be specifically surveyed, as well as at least one point beyond the top-of-bank to reflect the general topography of the floodplain. Three bank profile stations are located in the millrace; due to the uniformity of the channel these are spaced at increments greater than 300 feet (see Figure 2).

A top-of-bank soil core sample will be collected at each of the proposed bank profile locations (see Figure 2). Soil cores will be photographed, described, and segmented into the 0- to 6-inch depth interval, 6- to 12-inch depth interval, and 12- to 24-inch depth interval. Sectioning will be varied as necessary to capture visually-distinct strata, where present, consistent with the approach used for other Area 1 SRI bank soil core sectioning. All samples will be submitted to the laboratory for PCB analysis, and the surface sample of each core will also be analyzed for TOC and particle size distribution. This will generate approximately 234 samples analyzed for PCB and 78 samples analyzed for TOC and particle size distribution.

River Transect Probing and Survey

River transects will be surveyed to characterize the river channel geometry and the distribution and types of sediment. This information will be used to identify locations for sediment coring and to further characterize the channel geometry. River transects will be established across the river approximately at the location of every other pair of bank profiles (discussed above); this will result in a total of 22 transects. Additional intermediate transects will be added in the field, as needed, if significant areas of fine-grained sediment are observed between transect locations.

Probing and survey transects will be completed at locations corresponding to select bank profile stations as shown in Figure 2. At each transect, sediments will be probed with a steel rod and surveyed at approximately eight to ten locations at intervals between the two opposite bank profiles. At each probing location, the depth of water and the sediment thickness will be measured, the characteristics of the sediment will be noted, and the geographic coordinates and elevation will be determined to an accuracy of approximately 0.1 foot using conventional survey methods or GPS equipment, depending on conditions. The water surface elevation will be surveyed once during the survey activities at each transect.

Sediment Core Sampling

A stratified sediment sampling approach will be implemented to characterize sediment PCB concentrations in fine and coarse sediments within the historically-inundated area. Sampling and analysis will preferentially target fine-grained sediments. Visual observations and results of sediment probing will be used to field-locate cores in areas with fine sediment, including within the former oxbow, based on observations recorded during sediment probing. Approximately 75 percent of the cores will be allocated to fine-grained sediments and 25 percent to coarse-grained sediments. Up to 60 cores will be collected, yielding up to 45 cores from fine-grained sediments and 15 cores from coarse-grained sediments. Core sample locations will include selected probing locations, but may also include field-located samples between the probing transects to characterize significant fine-grained sediment deposits that may be identified by reconnaissance during probing activities.

At each of the locations identified, the water depth and sediment thickness will be recorded, and a core will be collected by driving Lexan® tubing into the sediment until refusal, creating a vacuum, and then retrieving the sediment. Each core collected will be photographed and described using the Uniform Soil Classification

System. The 0-2, 2-6, 6-12, and deeper one-foot increments will be analyzed for PCB; 20% of the cores will be analyzed for TOC and particle size distribution. These stratified sediment sampling activities will yield up to 60 cores, 240 sediment samples for PCB analysis, and 48 samples for TOC and particle size distribution.

Additional Floodplain and Dam Structure Survey

Surveys in upland floodplain areas and along portions of the Plainwell No. 2 Dam structures will be performed as needed to fill in data gaps and to complement other survey data from the SRI Phase I activities and proposed soil sampling. Ground elevations will be surveyed along the floodplain transects shown in Figure 1 to supplement the survey information that will be collected through other sampling activities and to supplement existing survey data from reconnaissance conducted in 2007. Additional survey of dam structures will include the earthen berm, the left diversion structure, and upper millrace head weir (see Figure 1).

A visual inspection of the dam and diversion structures, including the earthen berms, will also be performed. The current state of the structures will be described and documented photographically.

Water Level Recording

Three temporary staff gages are proposed to provide water surface profile data that may be used to develop a rating curve for the site, and to facilitate estimation of the frequency of inundation based on historical flow records and topographic information.

Staff gages are proposed 1) at the Penn Central Railroad bridge, 2) adjacent to the right diversion structure, and 3) at the upper head weir in the millrace (see Figure 1). At each location, the river stage will be recorded over a range of flow conditions. Over the same period of time, a target of 10 or more flow measurements will be made over a range of flow conditions at the upper head weir and at the upstream end of the historically-inundated area but downstream of the hydraulic influence of the bridge structures. The combined flow over the right and left diversion structures will be calculated as the difference between the upstream and downstream flows.

Habitat Assessment

A habitat characterization and assessment will be performed within the historically-inundated area. A site visit will be made by an ecological biologist who will describe, photograph, classify, and map the habitat and ecological components of the bank and floodplain. Specific components of the habitat to be investigated will include the banks, vegetation types, hydrology, and wildlife species. The habitat assessment will be used to characterize and map the existing habitat.

I will contact you to discuss this proposed plan. Once a USEPA-approved plan is agreed upon, ARCADIS will initiate sampling, subject to weather constraints, obtaining any additional necessary access agreements, and availability of agency oversight personnel.

Sincerely,

ARCADIS

Michael J. Erickson, P.E.
Associate Vice President

Copies:
Paul Bucholtz, MDEQ
Jeff Keiser, CH2M HILL
Michael Scoville, ARCADIS
Mark Brown, PhD, Georgia-Pacific Corporation
L. Chase Fortenberry, P.G., Georgia-Pacific Corporation
Suda Arakere, Millennium Holdings, LLC
David Guier, Millennium Holdings, LLC

Enclosures:

Table 1 – Summary of Proposed Sediment and Soil Sampling Plan

Table 2 – Proposed Floodplain Soil Sample Locations

Figure 1 – Proposed Floodplain Soil Sample Locations

Figure 2 – Proposed Bank Profile and River Transect Locations

Kalamazoo River Study Group
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Plainwell No. 2 Dam Area Investigation Plan

Table 1 - Summary of Proposed Sediment and Soil Sampling Plan

Field Activity	Description	Number of Locations	Location IDs	Sample Intervals	Number of Samples	Analyses
Survey	Bank Profiles - Detailed bank profiles from past the top-of-bank to the bottom of the river, surveyed at 78 locations along both sides of the river.	78	P2BS-1 through P2BS-39 P2BN-1 through P2BN-39	NA	NA	NA
	River Transects - Establish 22 transects at select bank profile locations, extend survey across river to the corresponding bank profile, probe sediment at 8 to 10 points along transect including both edge-of-waters for sediment depth.	22	KRT-17 through KRT-38	NA	NA	NA
	Floodplain Survey Transects - Survey floodplain area along 10 transects to supplement previous survey information.	NA	NA	NA	NA	NA
Soil Sampling	Top-of-Bank Sampling - Collect a soil core at the top of the bank at each bank profile.	78	P2BS-1 through P2BS-39 P2BN-1 through P2BN-39	0- to 6-inch, 6- to 12-inch, 12- to 24-inch	234	PCB, TOC (0- to 6-inch), particle size (0- to 6-inch)
	Grid Sampling - Sample on an approximate 200-foot grid to represent entire 89-acre area, including in-stream islands.	94	P2FP-01 through P2FP-94	0- to 6-inch, 6- to 12-inch, 12- to 24-inch, 12 inches	282	PCB, TOC (0- to 6-inch), particle size (0- to 6-inch)
Sediment	Stratified Sampling - A stratified sediment sampling approach will be implemented to characterize sediment PCB concentrations in fine and coarse sediments. Approximately 75 percent of the cores will be allocated to fine-grained sediments and 25 percent to coarse-grained sediments.	60	P2SED-01 to P2SED-60	0- to 2-inch, 2- to 6-inch, 6- to 12-inch, 12- to 24-inch, 12 inches	240	PCB, TOC (20% of 0- to 2-inch), particle size (20% of 0- to 2-inch)
Hydraulic Monitoring	Staff Gage - Establish 3 temporary staff gages. Monitor and record river stage over a range of flow conditions.	3	NA	NA	≥10	NA
	Flow measurements - Periodically measure flow at two of the staff gages over a range of flow conditions and water elevations.	2	NA	NA	≥10	NA
Habitat Characterization	Describe, photograph, classify, and map the habitat types and ecological components of the bank and floodplain.	NA	NA	NA	NA	NA

Notes:
TBD - To be determined
NA - Not applicable

Kalamazoo River Study Group
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Plainwell No. 2 Dam Area Investigation Plan

Table 2 - Proposed Floodplain Soil Sample Locations

Location ID	Approximate Coordinates, NAD83, International Feet	
	Easting	Northing
P2FP-01	12781200	341640
P2FP-02	12781403	341644
P2FP-03	12781193	341500
P2FP-04	12781402	341495
P2FP-05	12781603	341495
P2FP-06	12782008	341468
P2FP-07	12781398	341300
P2FP-08	12781602	341296
P2FP-09	12782013	341301
P2FP-10	12782192	341297
P2FP-11	12781603	341101
P2FP-12	12781606	340893
P2FP-13	12781947	340995
P2FP-14	12782198	341096
P2FP-15	12782395	341068
P2FP-16	12782407	340926
P2FP-17	12782597	340895
P2FP-18	12782801	340890
P2FP-19	12782989	340880
P2FP-20	12783199	340865
P2FP-21	12781596	340700
P2FP-22	12781799	340683
P2FP-23	12782198	340688
P2FP-24	12782395	340678
P2FP-25	12782798	340697
P2FP-26	12782997	340703
P2FP-27	12783207	340698
P2FP-28	12783404	340693
P2FP-29	12783598	340696
P2FP-30	12783799	340687
P2FP-31	12783993	340682
P2FP-32	12784195	340680
P2FP-33	12781603	340496
P2FP-34	12781803	340489
P2FP-35	12782001	340492
P2FP-36	12782199	340490
P2FP-37	12782414	340484
P2FP-38	12783403	340505
P2FP-39	12783602	340495
P2FP-40	12783802	340494
P2FP-41	12784003	340492
P2FP-42	12784200	340490
P2FP-44	12781603	340294

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Plainwell No. 2 Dam Area Investigation Plan

Table 2 - Proposed Floodplain Soil Sample Locations

Location ID	Approximate Coordinates, NAD83, International Feet	
	Easting	Northing
P2FP-45	12781794	340285
P2FP-46	12782004	340289
P2FP-47	12782195	340293
P2FP-48	12782365	340298
P2FP-49	12782606	340292
P2FP-50	12782780	340294
P2FP-51	12783023	340296
P2FP-52	12783197	340290
P2FP-53	12783422	340281
P2FP-54	12784197	340290
P2FP-55	12784401	340290
P2FP-56	12784593	340297
P2FP-57	12784805	340284
P2FP-58	12781601	340100
P2FP-59	12781805	340098
P2FP-60	12782004	340100
P2FP-61	12782201	340089
P2FP-62	12782382	340104
P2FP-63	12782596	340094
P2FP-64	12782797	340095
P2FP-65	12783208	340084
P2FP-66	12783391	340085
P2FP-67	12783602	340091
P2FP-68	12783784	340083
P2FP-69	12784009	340092
P2FP-70	12784201	340089
P2FP-71	12784400	340085
P2FP-72	12784600	340098
P2FP-73	12784813	340085
P2FP-74	12785017	340085
P2FP-75	12785173	340092
P2FP-76	12782406	339877
P2FP-77	12782600	339884
P2FP-78	12782797	339885
P2FP-79	12783002	339885
P2FP-80	12783606	339905
P2FP-81	12784008	339914
P2FP-82	12784198	339903
P2FP-83	12784402	339889
P2FP-84	12784598	339893
P2FP-85	12784804	339891
P2FP-86	12785002	339894
P2FP-88	12784407	339714

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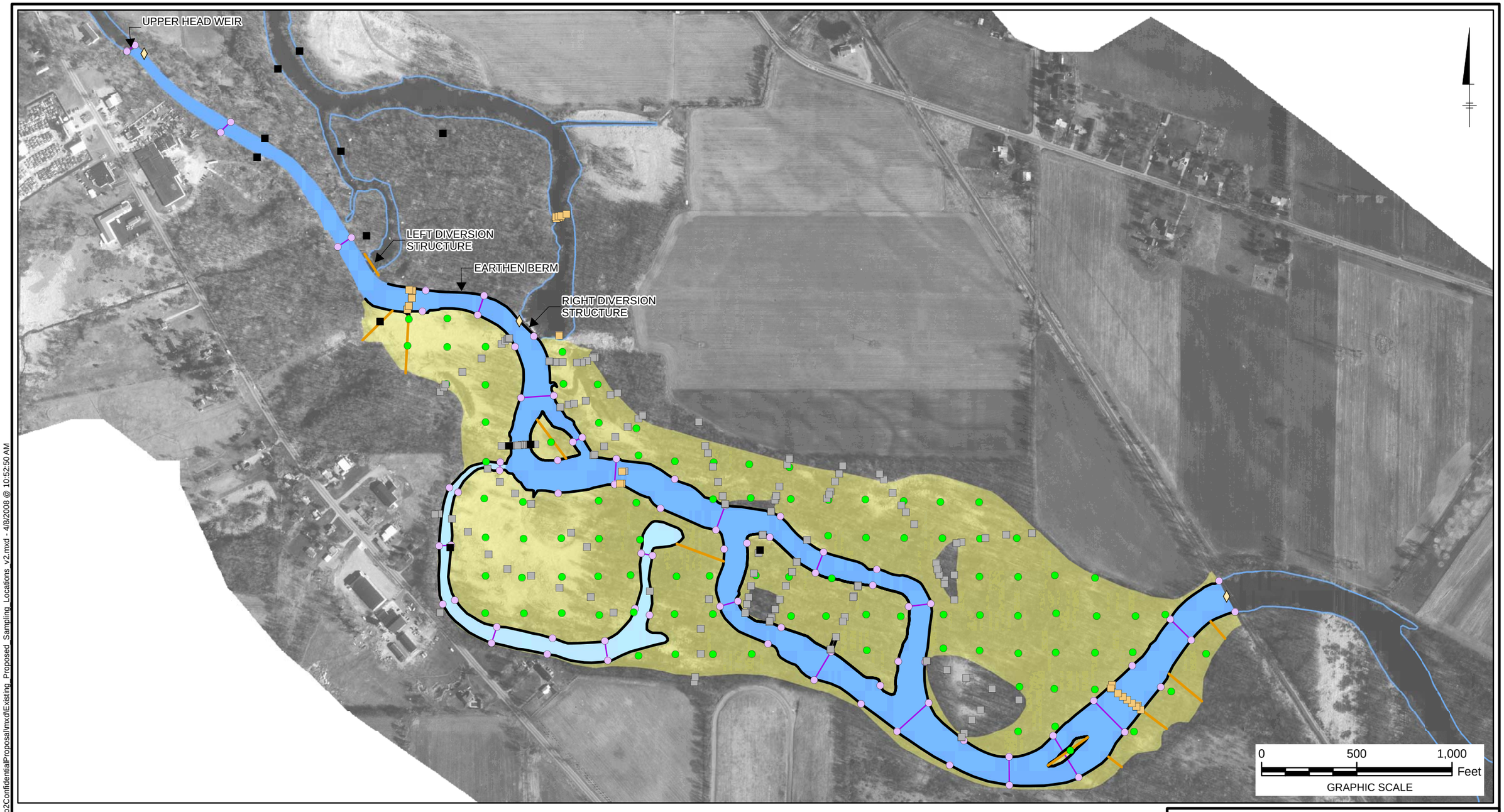
Plainwell No. 2 Dam Area Investigation Plan

Table 2 - Proposed Floodplain Soil Sample Locations

Location ID	Approximate Coordinates, NAD83, International Feet	
	Easting	Northing
P2FP-89	12784591	339703
P2FP-90	12784803	339699
P2FP-91	12785205	339688
P2FP-92	12784400	339479
P2FP-93	12784595	339505
P2FP-94	12784674	339379
P2FP-95	12785009	339478



LEGEND:

- EXISTING SEDIMENT SAMPLE LOCATION
- EXISTING SOIL SAMPLE LOCATION
- EXISTING SURVEY LOCATION
- PROPOSED SAMPLE LOCATIONS
- PROPOSED BANK PROFILE LOCATION
- PROPOSED STAFF GAGE LOCATION
- PROPOSED FLOODPLAIN SURVEY TRANSECT
- SHORELINE WITHIN IMPOUNDMENT AREA
- PROPOSED PROBING AND SURVEY TRANSECT
- FORMERLY INUNDATED AREA
- FORMER OXBOW AREA
- CURRENT RIVER CHANNEL

KALAMAZOO RIVER STUDY GROUP
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

EXISTING AND PROPOSED SAMPLE LOCATIONS

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FIGURE
1

SYR-40 JCR
KRSG (64539.500)
Q:\KRSG\MorrowDamToPlainwellDam\DamNo2ConfidentialProposal\mxd\Existing_Proposed_Sampling_Locations_v2.mxd - 4/8/2008 @ 10:52:50 AM

UPPER HEAD WEIR
KRT-01
P2BS-01
P2BN-01
P2SG-1
KRT-02
P2BS-02
P2BN-02
LEFT DIVERSION STRUCTURE
P2BN-03
KRT-03
P2BS-03
EARTHEN BERM
P2BN-05
KRT-04
P2BS-05
P2SG-2
RIGHT DIVERSION STRUCTURE
P2BN-04
P2BS-04
P2BN-06
P2BS-06
P2BN-07
KRT-05
P2BS-07
P2BN-08
KRT-11
P2BS-08
P2BN-19
KRT-12
P2BS-19
P2BS-21
KRT-13
P2BN-21
P2BS-22
P2BN-22
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KRT-17
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P2BN-31
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P2BN-10
KRT-06
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P2BS-11
P2BN-11
P2BN-09
P2BS-09
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P2BS-20
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KRT-07
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P2BN-36
KRT-21
P2BS-36
P2BN-38
KRT-22
P2BS-38
P2BN-37
P2BS-37
P2BN-39
P2SG-3
P2BS-39

0 500 1,000 Feet
GRAPHIC SCALE

LEGEND:

- EXISTING SEDIMENT SAMPLE LOCATION
- EXISTING SOIL SAMPLE LOCATION
- EXISTING SURVEY LOCATION
- PROPOSED BANK PROFILE LOCATION
- SHORELINE WITHIN IMPOUNDMENT AREA
- PROPOSED PROBING AND SURVEY TRANSECT
- FORMERLY INUNDATED AREA
- FORMER OXBOW AREA
- CURRENT RIVER CHANNEL

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PROPOSED BANK PROFILE AND RIVER TRANSECT LOCATIONS

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FIGURE
2

SYR-40 JCR KEW
KRSG (64539.500)
Q:\KRSG\MorrowDamToPlainwellDam\DamNo2ConfidentialProposal\mxd\Existing_Proposed_Transects.mxd - 4/9/2008 @ 11:47:46 AM